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No. 3

RESEARCH AID

ESTIMATED FLOORSPACE OF TBILISI AIRFRAME PLANT NO. 31

CIA/RR RA-38
18 August 1958

CENTRAL INTELLIGENCE AGENCY
OFFICE OF RESEARCH AND REPORTS

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(ORR Project 33.1746)

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FOREWORD

This research aid, one of a series evaluating current floorspace of Soviet airframe plants of the Ministry of Aviation Industry (Ministerstvo Aviatsionnoy Promyshlennosti -- MAP), is based on metrical analysis* of World War II German photography. Supplementary intelligence data also have been used in an attempt to ascertain the composition and functions of the individual plant buildings. An effort has been made to determine the areas of the plant which are multistory and to include the latest information on new construction. This research aid will be reviewed and reissued periodically to include new intelligence information as available.

* Determination of measurements by the use of aerial photographs.

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Appendixes

Illustrations

ESTIMATED FLOORSPACE OF TBILISI AIRFRAME PLANT NO. 31*

Summary

Tbilisi Airframe Plant No. 31 in the USSR is estimated to contain a minimum total of 1.3 million square feet (sq ft) of floorspace.** The plant has a final assembly area of approximately 530,000 sq ft, or about 41 percent*** of the total floorspace. The administration area of the plant is believed to comprise a minimum of 80,000 sq ft, or about 6 percent of the total floorspace. The multistory area of the plant is estimated at somewhat less than 110,000 sq ft, or about 8 percent of the total floorspace. Within the plant, there are more than 110,000 sq ft of warehouse**** area, or about 9 percent of the total floorspace. Covering an over-all area of about 5.5 million sq ft and having a total roof area of about 1.2 million sq ft, the plant has a building density† of about 22 percent.

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* Based on aerial photography. (See Figure 1, following p. 2.) 1/ (For serially numbered source references, see Appendix D.) The estimates and conclusions contained in this research aid represent the best judgment of ORR as of 1 June 1958.

** All figures dealing with square footage are rounded to two significant digits.

*** All percentages are computed from the unrounded data..

**** The term warehouse is applied to those buildings or areas within the plant which have the primary functions of receiving materials from external sources and of holding these materials in bulk quantities for subsequent distribution to the processing points in the plant.

The term storage areas is applied to those buildings or areas, usually parts of buildings, which have primary functions other than storage, in which materials are stored or maintained for the direct support of production or service activities. These areas normally are located adjacent to the activities which they support, and they receive their stores from plant warehouses.

† The term building density represents the proportion of the total roof area of an airframe plant to the total plant site expressed as a percentage.

1. Location.

Tbilisi Airframe Plant No. 31 (41°40' N - 44°53' E) 2/ is located in the USSR in the southeast suburbs of Tbilisi. The plant is on the north bank of the Kura River, approximately 5 nautical miles southeast of the center of Tbilisi and approximately 700 feet (ft) northeast of Tbilisi Railroad Bridge S over the Kura River.

2. History.

Airframe Plant No. 31 originally was located in Taganrog but in 1941 was dismantled and moved to its present location. An aircraft repair plant, Plant No. 448, which had been located at the Tbilisi site since 1939, was combined with Plant No. 31, and the combined plants received the designation Airframe Plant No. 31, which has been retained to the present time.

3. Description.

The plant site of Tbilisi Airframe Plant No. 31 is irregularly shaped, with the longer axis of the site oriented in a northwest-southeast direction (see Figures 1 and 2*). The site occupies an area of approximately 5.5 million sq ft. 25X1X

Analysis of World War II German photography (see Figure 1) dated October 1942, correlated with [redacted] reveals that at the present time the roof area and the total floorspace of Tbilisi Airframe Plant No. 31 are nearly identical with the roof area and the total floorspace existing at the plant in October 1942. Although several small buildings appearing on the 1942 photographs have been torn down, other buildings have been added, thus keeping the roof area and the total floorspace at the 1942 levels. It is estimated that Airframe Plant No. 31 contains a roof area of 1.2 million sq ft.** With a plant site containing 5.5 million sq ft, Airframe Plant No. 31 has a building density of approximately 22 percent.

Because there has been no new construction at Tbilisi Airframe Plant No. 31 since World War II, the total floorspace of the plant currently is estimated to be approximately 1.3 million sq ft. There are believed to be 80,000 sq ft of administration area and more than 110,000 sq ft of warehouse area, 6 and 9 percent, respectively, of the total floorspace. The multistory area of the plant in 1958 is estimated to be

* Following p. 2.

** Metrical analysis of Tbilisi Airframe Plant No. 31 is based on source 3/. Dimensions of individual buildings have been changed according to the best judgment of the analyst.

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Figure 1

USSR: VERTICAL PHOTOGRAPH OF TBILISI AIRFRAME PLANT NO. 31

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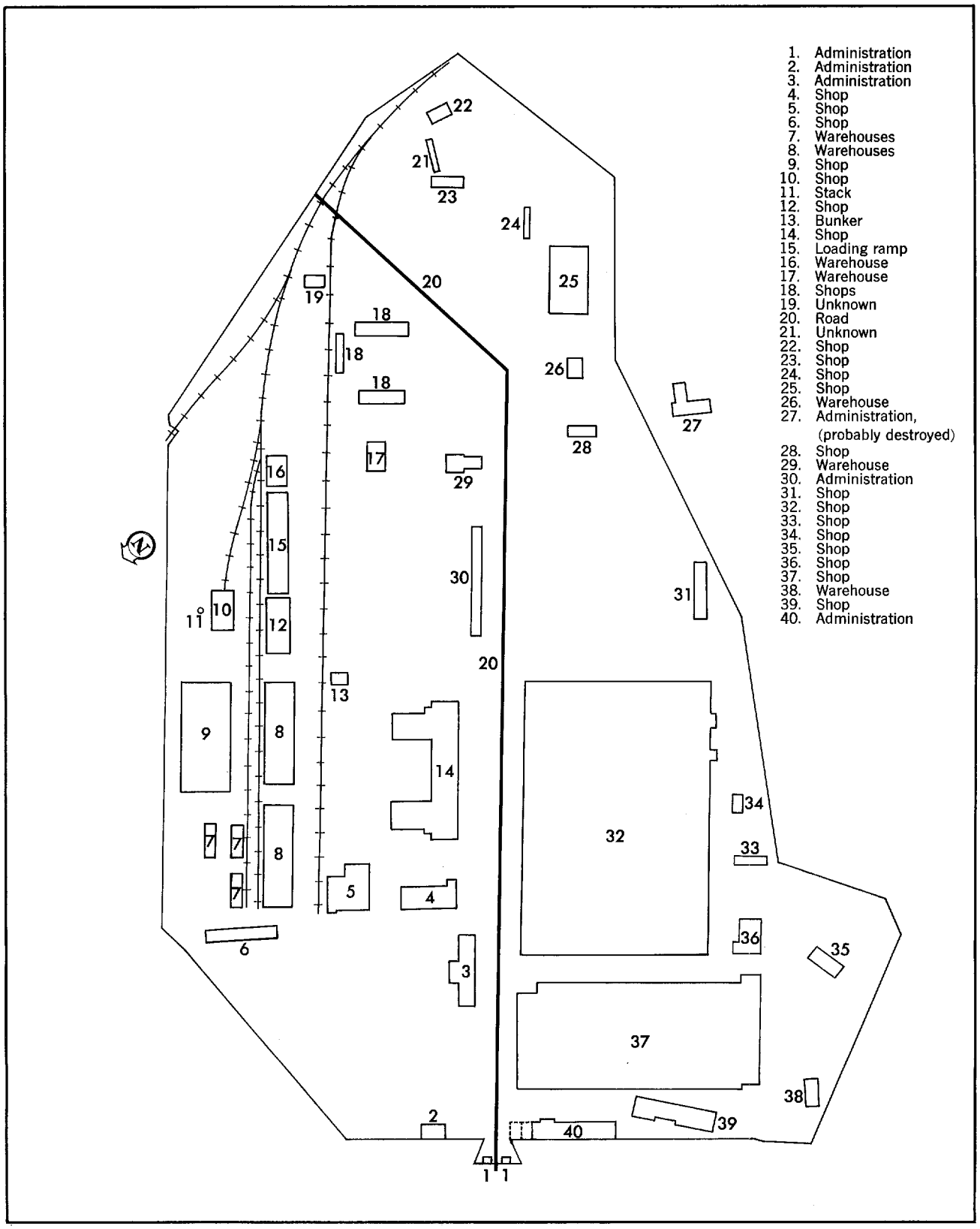
 Figure 2

USSR: LAYOUT OF TBILISI AIRFRAME PLANT NO. 31



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somewhat less than 110,000 sq ft, or about 8 percent of the total floorspace.

Constructed between 1939 and 1942, the major buildings at Tbilisi Airframe Plant No. 31 are of reinforced concrete and steel framework with side walls and filler walls made of concrete slab, brick, or sheet metal. Although roof designs vary, the roofs of major buildings are primarily of the monitor type. (See Figure 3.*)

Tbilisi Airframe Plant No. 30 is served by well-traveled roads from Tbilisi and by railroad spur lines from both the Tbilisi-Leninakan railroad and the main double-track Batumi-Tbilisi-Baku railroad.

The Tbilisi-Soganlug Airfield, located 2.3 nautical miles to the east-southeast, may be used as a test and flyaway field for Tbilisi Airframe Plant No. 31. A concrete road, reportedly used as a taxiway, connects the airfield with the airframe plant. 4/

4. Final Assembly.

Analysis of World War II German photography and of prisoner-of-war reports indicates that the final assembly area of Tbilisi Airframe Plant No. 31 is contained in 1 shop type of structure, 906 ft long by 590 ft wide. This building, Building No. 32,** contains approximately 530,000 sq ft, or 41 percent of the total floorspace. The building contains no reported basement areas.

5. New Construction.

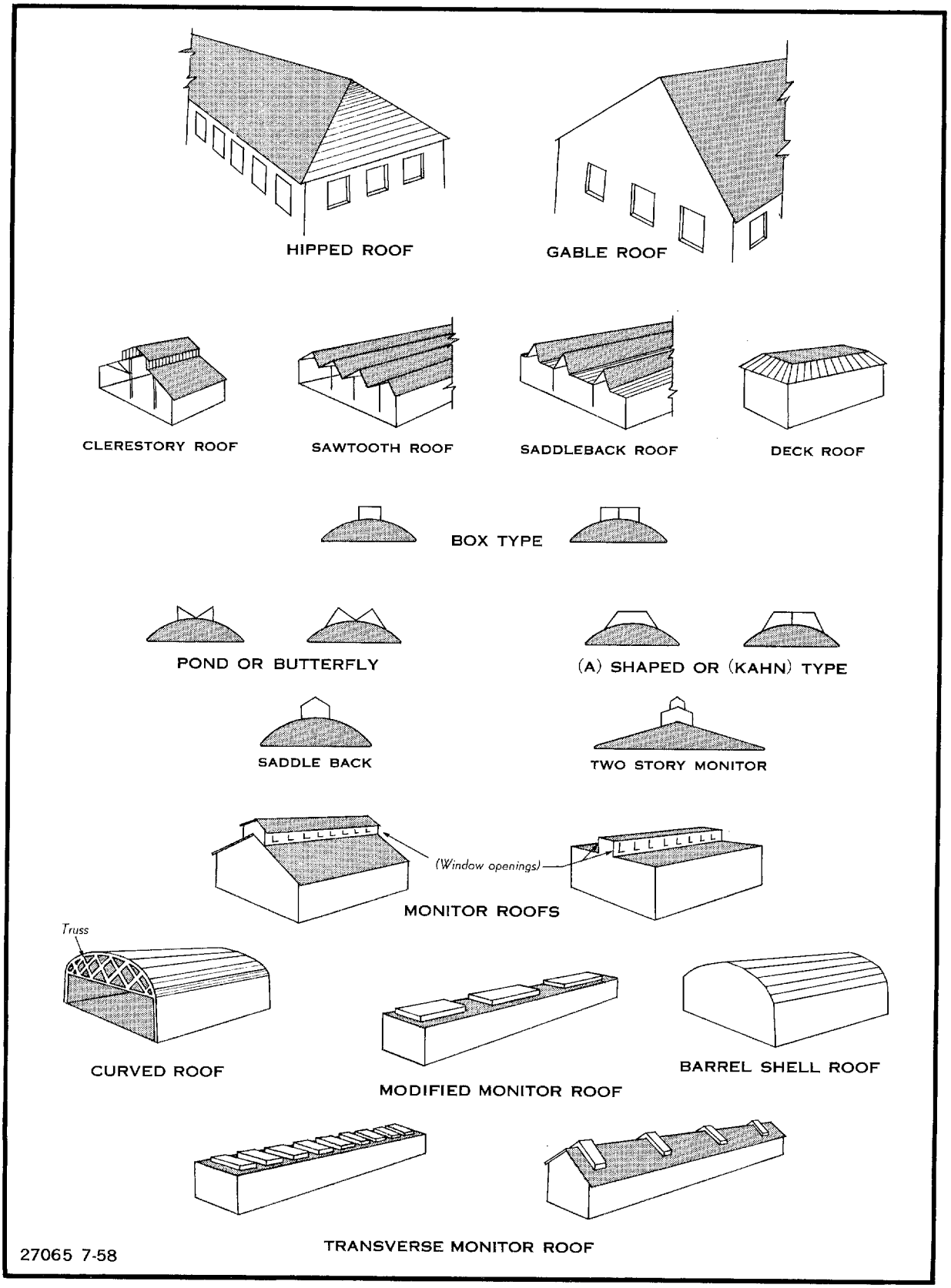
There has been no known new construction of any magnitude at Tbilisi Airframe Plant No. 31 since World War II. German photography revealed the foundation for a large assembly type of building which apparently was to have been constructed in 1941 when the other original buildings were constructed. This building was not completed, and there are no recent reports concerning construction in this area. For the purposes of this research aid, it is estimated that Tbilisi Airframe Plant No. 31 contains no new construction.

* Following p. 4.

** Building numbers refer to the designations in Figure 2, following p. 2, above.

TYPES OF ROOFS

Figure 3



APPENDIX A

COMPOSITION OF THE FLOORSPACE OF TBILISI AIRFRAME PLANT NO. 31 a/*

* Footnotes for Appendix A follow on p. 7.

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APPENDIX B

METHODOLOGY

On the basis of available intelligence, an effort was made to determine the function of each building in Tbilisi Airframe Plant No. 31, to identify multistory plant areas, and to account for new plant construction. All major buildings within the plant site are listed in Appendix A.*

German vertical photographs taken during 1942 were used to determine the roof area and the physical layout of the plant. Metrical analysis of this photography provided an estimate of the total roof area of the plant. In the computation of this total, no allowance could be made for multistory buildings. To compensate for this factor, intelligence information, consisting chiefly of prisoner-of-war interrogation reports, was used. Although this category of information often is considered unreliable, plausible data from this source were used to determine the functions of the plant buildings. Whenever functions of buildings were unknown, the best judgment of the analyst was used to provide an estimate.

* P. 5, above.

APPENDIX C

GAPS IN INTELLIGENCE

The accuracy of the estimates of the floorspace of Tbilisi Airframe Plant No. 31 is impaired greatly because of the paucity of information. German vertical photographs taken during 1942 are available, however, and from the photographs the roof area and the physical layout of the plant as it was in 1942 can be computed. A lack of current vertical photography precludes further study of the plant by this means.

Helpful information was obtained from interrogation of German prisoner-of-war returnees. Unfortunately, these returnees generally were restricted to the warehouse areas of the plant, and reports of their observations of the remainder of the plant area are vague and incomplete.

Information pertaining to multistory areas within the plant is virtually nonexistent. Because estimates of floorspace in multistory areas greatly affect the estimate of total floorspace, acquisition of this information is of prime importance. The lack of complete oblique ground photography hinders the determination of building heights and designs, and the lack of both vertical and ground photography hinders detection of possible new construction in the plant. Current details of the final assembly area and reliable information concerning the composition of other essential buildings likewise are not available.

APPENDIX D

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this research aid. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

25X1A

1. [redacted]
2. [redacted]

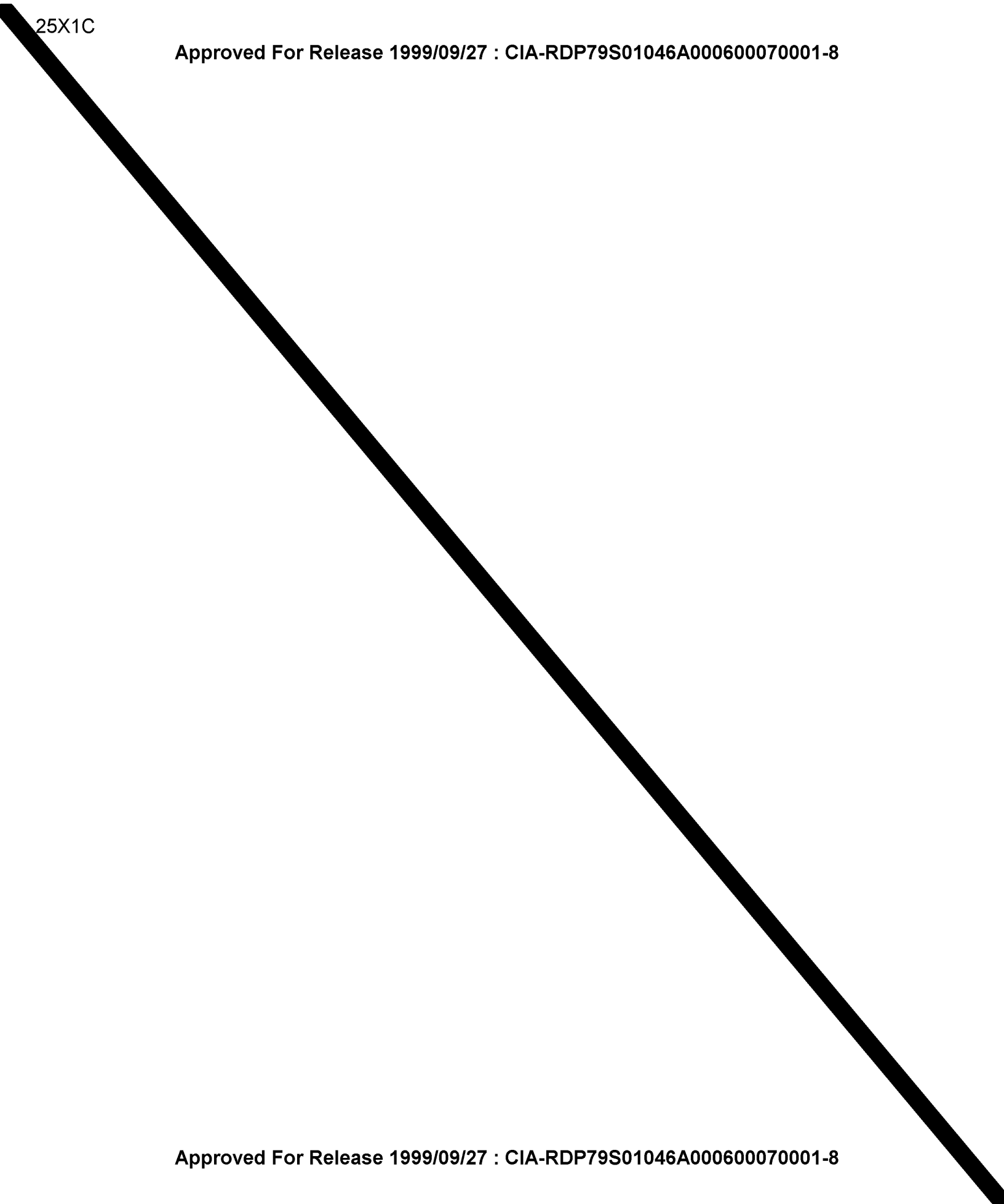
25X1A 3. CIA. D/GP/RR, Tbilisi Airframe Plant, 23 Jun 55. S.

4. [redacted]

5. CIA. D/GP/RR (3, above).

6. [redacted]

25X1A 7. [redacted]



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